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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/853,288	05/11/2001	Richard H. Sherman	00-1016	5854

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Keith D. Nelson
Lockheed Martin Corporation
Building 220, Mail Stop A08
P.O. Box 49041
San Jose, CA 95161-9041

EXAMINER	
NORRIS, TREMAYNE M	

ART UNIT	PAPER NUMBER
2137	2

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/853,288	SHERMAN ET AL.	
	Examiner	Art Unit	
	Tremayne M. Norris	2137	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 May 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 May 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 7 is objected to because of the following informalities: There is an unnecessary parenthesis in the claim. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1,6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Pecora et al (US pat 5,379,346).

Regarding claim 1, Pecora teaches a chaos privacy system for use in communicating an analog signal, the system comprising:

a transmitter comprising:

a key stream generator comprising a chaotic circuit that generates a key stream in response to a private key parameter, and transmits a key synchronization parameter (col.6 lines 8-19; col.9 lines 60-67; col.10 lines 29-33); and

a transmitting chaotic circuit that processes the analog information signal and the key stream to generate and transmit a cipherwave (col.6 lines 8-19; col.9 lines 60-67; col.10 lines 29-33); and

a receiver, for receiving the transmitted cipherwave, the transmitted key synchronization parameter, and a copy of the private key parameter (col.9 line 60 thru col.10 line 33), that comprises:

a key stream generator comprising a chaotic circuit that processes the copy of the private key parameter and the transmitted key synchronization parameter to generate a copy of the key stream; and

a receiving chaotic circuit that processes the copy of the key stream and the cipherwave to demodulate the cipherwave to recover and output the information signal (col.9 line 60 thru col.10 line 33).

Regarding claim 6, Pecora teaches a chaos privacy method for use in communicating an analog information signal, the method comprising the steps of:

Generating a random key stream using a chaotic circuit;

Processing analog information signals and the random key stream to generate a cipherwave that has a uniform probability density for all information signals and the random key streams;

Transmitting the cipherwave and a public key over a communication channel (col.10 lines 31-33);

Receiving the cipherwave, and public key;

Synchronizing to the public key using a chaotic circuit to produce a copy of the random key stream;

And processing the cipherwave and the copy of the random key stream to reconstruct the analog information signal (col.2 lines 18-47; col.9 line 61 thru col.10 line 33).

Regarding claim 7, Pecora teaches the cipherwave is generated by multiplying the information signals by the random key stream (col.9 line 67 thru col.10 line 6).

Regarding claim 8, Pecora teaches the information signal is generated by multiplying the cipherwave by the random key stream (col.2 lines 40-47; col.9 line 67 thru col.10 line 33).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pecora, and further in view of Bernstein et al (US pat 5,007,087).

Regarding claim 2, Pecora teaches the system of claim 1. What Bernstein teaches that Pecora does not teach is the key stream generator in the transmitter comprises a first chaotic circuit comprising a first sample and hold circuit coupled to a first voltage controlled oscillator; and

a second chaotic circuit comprising a second sample and hold circuit coupled to a second voltage controlled oscillator;

wherein an output of the first voltage controlled oscillator provides an input to the second sample and hold circuit, a first output of the second voltage controlled oscillator provides an input to the first sample and hold circuit, the first voltage controlled oscillator outputs the key stream, and a second output of the second voltage controlled oscillator outputs the key synchronization parameter (fig.9; col.9 lines19-37). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Pecora's synchronized chaotic system with Bernstein's apparatus for generating secure random numbers using chaos in order to provide a secure system with randomness properties in a chaotic environment (Bernstein col.1 lines 22-31; col.2 lines 24-26; col.3 lines 16-29).

Regarding claim 3, Pecora and Bernstein in combination teach the method of claim 2, in addition Pecora teaches the transmitting chaotic circuit comprises a hard limiting circuit for receiving the key stream from the key stream generator and for

converting the output of the first voltage controlled oscillator to selected fixed values; and

an analog multiplier circuit for multiplying the information signal with the sampled random signal to produce the cipherware (col.9 line 67 thru col.10 line 6).

Regarding claim 4, Pecora teaches a key stream generator in the receiver (col.2 lines 18-21; col.2 lines 40-47). What Bernstein teaches that Pecora does not teach is a third chaotic circuit comprising a third sample and hold circuit coupled to a third voltage controlled oscillator; and

a fourth chaotic circuit comprising a fourth sample and hold circuit coupled to a fourth voltage controlled oscillator;

wherein the key synchronization parameter is input to the third sample and hold circuit, an output of the third voltage controlled oscillator provides an input to the fourth sample and hold circuit, an output of the fourth voltage controlled oscillator provides an input to the third sample and hold circuit, and the fourth voltage controlled oscillator outputs the copy of the key stream (fig.9; col.9 lines19-37). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Pecora's synchronized chaotic system with Bernstein's apparatus for generating secure random numbers using chaos in order to provide a secure system with randomness properties in a chaotic environment (Bernstein col.1 lines 22-31; col.2 lines 24-26; col.3 lines 16-29).

Regarding claim 5, Pecora and Bernstein in combination teach the method of claim 4, in addition Pecora teaches the receiving chaotic circuit comprises a hard limiting circuit for receiving the copy of the key stream from the third voltage controlled oscillator and for converting it to selected fixed values;

a sample and hold circuit for sampling the hard limited output of the hard limiting circuit at a fixed frequency to produce a sampled random signal; and

an analog multiplier circuit for multiplying the cipherware with the sampled random signal to recover the information signal (col.9 line 61 thru col.10 line 33; col.19 line 35 thru col.20 line 15).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tremayne M. Norris whose telephone number is (571) 272-3874. The examiner can normally be reached on M-F 7:30AM-5:00PM alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Caldwell can be reached on (571) 272-3868. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tremayne Norris

October 28, 2004

Andrew Caldwell

Andrew Caldwell